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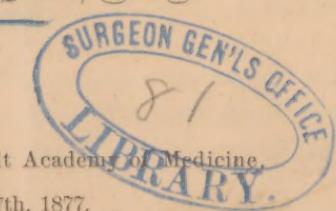
Medicinal Plants

INDIGENOUS IN MICHIGAN,

By A. B. Lyons, M. D.

Read before the Detroit Academy of Medicine,

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The Indigenous Medicinal Plants of Michigan.

BY A. B. LYONS, M. D., READ BEFORE THE DETROIT ACADEMY OF MEDICINE.

The list of our *materia medica*, which is every year becoming extended, notwithstanding the growing distrust in the health-restoring efficacy of drugs, embraces a bewildering variety of substances from every conceivable source. The mineral kingdom is laid under contribution, and the skill of the chemist is called into requisition to devise such combinations as shall produce most certainly and most agreeably the effects desired. The animal kingdom is invaded, not alone for such exceptionally active substances as are furnished in the secretions of the musk deer or the beaver, but for those essential constituents of the natural fluids of the body (*e. g.*, pepsin in the gastric fluid) which in certain conditions of the system are produced in insufficient amount. Yet it is to the vegetable world that we are most largely indebted for the properly remedial agents we employ.

“The age culls simples”—as former ones have done—the poet adds “with its broad clown’s back turned broadly to the sun”—a censure of the materialistic spirit of our scientific studies that is I fear too just even in this nineteenth century.

But our simples are culled for us often by people of strange speech—the South American Indian, the Hottentot, the Australian, and the Mongolian, and come from nearly every country on the face of the earth. Having easy access thus to the treasures of all the world, we are rather apt to neglect our own undeveloped resources, and indeed are ignorant perhaps ourselves of the extent and value of those resources.

Our own State is almost wholly dependent upon foreign sources for its supply of crude drugs. We go abroad even for those herbs which grow most abundantly in our own fields and woodlands. In fact the flora of our State is an unusually rich one, and it contains not a few of the most important medicinal plants used in the so-called “regular” practice. The object of the present paper is to enumerate and comment briefly upon the more interesting of these indigenous medicinal plants of Michigan. Viewing the subject primarily from the stand-point of the botanist, I shall take up the

plants first as they group themselves in natural orders, although to the medical man a classification of drugs based upon their therapeutic action might seem more truly natural.

The first natural order in the arrangement commonly adopted, is the Ranunculaceæ—the family of the butter-cups—a large one, including many plants prized for the fantastic form and rich coloring of their flowers, and not a few of the most potent drugs. I need only instance as illustrations of the former the larkspur, monk's-hood, and columbine, of the latter aconite, the most active of all poisons, a favorite remedy therefore of our homeopathic brethren who "wish to avoid the disturbing effect upon the system of such powerful agents as the 'allopaths' use."

Many of the Ranunculus family contain an acrid principle which has made them of occasional service as rubefacients or epispastics. This is especially true of the various species of the typical genus from which the order takes its name, the "butter-cups" and "crow-foots" (*Ranunculus*). Our familiar field butter-cups (*Ranunculus acris*) is not indigenous, having been imported to us from Europe, but the common butter cup of meadows and low grounds (*R. repens*) that resembles it very closely is a native, and so are most of the other species, a dozen or so, that are more or less abundant, throughout the State.

Much more important to the physician is the golden seal (*Hydrastis Canadensis*), a plant nowhere very abundant, and found only somewhat sparingly in rich woodlands in the southern portions of our State. With its large veiny leaves, a solitary one springing from the root, and a single pair borne at the summit of the stem, its greenish flower destitute of petals, its raspberry-like fruit consisting of a cluster of scarlet berries, and its yellow, knotty root, the plant is one that attracts the attention of the least curious, while its medicinal properties, that are as yet only imperfectly understood, are not less remarkable than are its peculiarities of aspect. Its virtues, like those of the Aconite, are due at least in part to alkaloids of which it contains two, hydrastia, peculiar to this plant, and berberina, found also in many other plants of this and other (mostly allied) orders.

In deep, wet woods, throughout the northern part of the State

one meets frequently with a delicate trailing plant whose shining three-parted leaves remind one of the dew berry or creeping blackberry with which we in more southern latitudes are familiar. This plant however grows not in sand, but more commonly among the mosses in bogs or on the trunks of fallen trees. On tearing it from its slender hold, we notice that its long thread-like root is of a bright yellow color, and at once the name "gold thread" comes to us, and we recognize its aptness. Yes, this is the *Coptis* whose efficiency as a "simple bitter tonic" warrants the estimation in which it is held in domestic practice.

In the delicate, pretty, slender-pointed white stars that form its blossom it is the sepals which constitute the conspicuous portion, the star, while the petals are reduced to insignificant club-shaped appendages. The star-like flower gives place to a star-like dry fruit. As in the golden seal, the yellow color of the root is associated with the presence of the alkaloid berberina, to which the active properties of the plant are doubtless in part to be ascribed.

Among the rarer plants of our Michigan woods, is one commonly known in medicine by a name unpleasantly suggestive, *Cimicifuga*, called variously by botanists *Actaea*, *Macrotyls*, *Cimicifuga*, and popularly known as black snake-root. This is Pierce's Golden Discovery (or his favorite prescription, I really forget which), and is doubtless a valuable medicine. Hardly any of our summer wild flowers are more worthy of note for their beauty than this stately herb whose slender, erect, wand-like racemes have given to it its specific name, *racemosa*.

The well-known *Hepatica* or liver leaf whose delicate purple-blue or white flowers are among the first in this latitude to herald the advent of spring, maintains a position in the secondary list of the U. S. P. probably more as a relic of the old absurd doctrine of signatures, than from any real merit. Among the members of this family of which I find mention in the United States Dispensatory, but of doubtful efficacy in medicine, is the wind-flower (*Anemone nemorosa*), abundant everywhere, whose blossoms, too shy ever to expand wholly, yet too eager to meet the first warming rays of the returning sun to be discouraged by the rude blasts of April gales, are medicine indeed to those of us who after six months

of continuous winter grow sick with longing for the life and beauty and abounding joy of the summer season.

Resembling the wind-flower in aspect, but still more strongly the *rue anemone* is the *Isopyrum binternatum*, which is however a rare plant in Michigan.

The white cohosh (*Actaea spicata*), known by its waxy white, mealy berries, borne on short thickened stems in an erect spike (two inches in length), is common in woodlands.

The wild larkspur (*Delphinium exaltatum*), familiar enough in cultivation, is occasionally met with in Michigan, but belongs rather to the south, and is chiefly interesting from its close relationship to the more active aconite.

The virgin's-bower (*Clematis virginiana*), a climber, prized rather for the beauty of its abundant white flowers and still more for that of the cloud of down which it exhibits in fruit, than for its utility in medicine, is widely distributed in the State.

The magnolia family has but a single representative in Michigan, the stately, luxuriant growing tulip tree (*liriodendron tulipifera*), alone among our forest trees in following the tropical fashion in its conspicuous, gaudily colored, tulip-like blossoms. It belongs in fact to a milder climate than ours, and is not found much further north than Detroit. It is enumerated, however, by C. F. Wheeler among the plants of Ionia county. In medicinal properties it seems to resemble the willows, and perhaps has been, like them, heretofore too much neglected.

The custard-apple family is represented also by a single species, the papaw (*Asimina triloba*), whose seeds are said to be an active emetic.

The moon-seed family, which like the last two belongs chiefly to the tropics, and furnishes to the *materia medica* the poisonous coccus as well as the mild bitter calumba, has its representative with us in the *Menispermum Canadense*, the bitter yellow root of which, like calumba, contains berberina, and has been sold under the name of Texas sarsaparilla.

The barberry family is a small one, but it furnishes us one of the most valuable of all the remedies drawn from the vegetable kingdom. Among the plants that attract our attention in the early

spring is one that unfolds rapidly from the summit of a short stem (1° high), two large peltate leaves, round in general outline, but deeply lobed. At their base appears a bud which promises to open speedily, but we watch it for weeks with unsatisfied curiosity. At length, when the ample leaves have nearly attained their growth, the tardy bud expands, and at last bursts into a blossom of surprising beauty; petals of purest white, forming a symmetrical chalice to contain the numerous pale-yellow filaments and a curiously twisted body, the unformed future fruit in the center. The flower is succeeded by a fruit of the size and shape of a greengage plum, which when ripe is fragrant and edible. This is the May-apple or mandrake (*Podophyllum peltatum*), from the root of which is prepared the powerful resinoid, podophyllin, the basis of the "pleasant purgative pellets," "mandrake pills," and numerous other popular laxative and "anti-bilious" remedies.

It is interesting to note, again, in this plant the presence of the alkaloid berberina—named from the Barbary in which it was first discovered—which gives to much of the podophyllin in the market its golden-yellow color.

A rare and curious plant is the twin-leaf *Jeffersonia diphylla*, which has some repute as an expectorant and emetic.

Remarkable for its bluish, glaucous foliage, is the more common blue cohosh, *Caulophyllum*, believed to exert a special influence over the functions of the uterus.

The water-lilies, forming a family by themselves, *Nelumbiacæ*, need only be mentioned for the possible virtues which their fleshy, astringent, bitter roots may possess.

Among the curiosities of the vegetable kingdom are the trumpet-shaped insect-traps which constitute the leaves of the pitcher-plants (*Sarraceniacæ*). Not less curious, though less obvious in design, is the umbrella-shaped expansion of the style, which, in these plants, covers the flower like a lid. The single species which is common in bogs throughout our state, *S. pupurea*, has been lauded as a specific in the treatment of small-pox; another instance, perhaps, of the influence of that obsolete doctrine of signatures.

The importance of the poppy family in medicine leads us to

expect much from the few representatives it has in our State, and we are not disappointed, for here we find the familiar name of sanguinaria—*blood root*. Growing abundantly in rich woodlands, the plant might readily be overlooked were it not for the conspicuous beauty of its pure white, solitary blossoms, which appear with the hepaticas and anemones, as forerunners of summer's profusion of flowers.

Like most of the plants of this family, this one exudes when wounded a thick, colored juice, the red color of which suggests the Latin as well as the popular name of the plant.

This, in fact, is the only plant of the poppy family that fairly belongs to our State. The prickly poppy, *Argemone Mexicana* coming from further south, has established itself in the southern part of the State, and like the wild celandine, a stranger from over the water, possesses active medicinal properties, although rarely used among us.

The mustard family contains no plants that are properly poisonous, but numbers several, like the horse-radish, water-cress, that are esteemed anti-scorbutic, and a few which contain an acrid volatile oil, rendering them useful as rubefacients and revulsives. Most important of all is the common black mustard which, though not indigenous, has become thoroughly naturalized. I merely mention, besides this, the marsh-cress (*Nasturtium palustre*), pepper-root (*dentaria*), of which we have two species, the rather rare cuckoo-flower (*Cardamine pratensis*), the hedge mustard (*Sisymbrium officinale*), the pepper-grass (*Lepidium virginicum*) and the shepherd's-purse (*Capsella bursa-pastoris*)—the commonest of weeds—naming those only which are mentioned in the U. S. Dispensatory, and so dismissing a family that is more perplexing than interesting to the botanist.

The rock-rose family (*Cistacæ*) also furnishes one plant that is thought worthy of a place in the U. S. P. secondary list—the frost-weed (*Helianthemum Canadense*).

Violets have formerly been used largely in medicine, and so I must include in my enumeration the dozen or so of species that belong to our State.

The sun-dew family has recently been the subject of many inter-

esting observations on the carnivorous properties of plants, and this has, perhaps, led to a study of the medicinal virtues of the most common species of the family—*Drosera rotundifolia*.

St. John's-wort, which gives the name to the next natural order, is known to us only as a pernicious weed, introduced into this country from Europe; it formerly enjoyed a high repute, not only as a vulnerary, but in the treatment of a great variety of diseases; but it is now omitted from the list of the U. S. P. We have, besides, half a dozen indigenous species, some of which probably have the virtues, if there be any, that belong to the naturalized plant.

The large family of the pinks (*Caryophyllaceæ*), furnishes us no indigenous plants at all noticeable for beauty, or useful medicinally. The naturalized soap-wort (*Saponaria officinalis*), is an exception to the rule in this family, in that it contains a poisonous principle, saponine.

The mallow family furnishes no indigenous plants of any interest, although two species of malva—the high and the low mallow—have become naturalized among us, and are sometimes used as demulcents.

The allied purslane family contains no plant of greater interest than the very troublesome weed from which it takes its name; a plant commonly eaten in many countries “for greens,” and esteemed anti-scorbutic.

In the wild crane's-bill (*Geranium maculatum*), representing the geranium family, we come to a useful astringent which is not seldom prescribed by our physicians. It is found abundantly in wild lands everywhere, and might come into more general use were it not for the troublesome propensity its preparations have to gelatinize with age. The rank smelling herb Robert is also a species of geranium, but quite different in its properties from *G. maculatum*.

The touch-me-nots (*Impatiens fulva* and *I. pallida*), are succulent, pale-foliaged plants, common everywhere in moist, shady places—reputed useful in the treatment of piles.

The rue family is a large and important one, including the well-known genus *citrus*, to which belong the orange, lime, lemon, citron,

etc.; our own flora includes but two plants in this order; both of them, however, worthy of note.

One is the American hop-tree, or wafer ash; the latter name applied to it from the appearance of its thin, round, dry fruit, clustered in globular heads, the former because this fruit has been used as a substitute for hops. It is undoubtedly a valuable medicine, possessing tonic properties without the intense disagreeable bitterness of gentian or quassia.

The other representative of this family is the American prickly ash, the fiery qualities of whose aromatic, dry red berries most of us have had experience of in our younger days. No one certainly can ramble much in southern Michigan without learning to respect the territory guarded by the sharp, hooked prickles of the shrub. Entomologists recognize it as the feeding plant of a caterpillar, from which comes one of our handsomest butterflies (*Papillio cresphontes*). The bark, like that of the wafer-ash, contains berberina, and is tonic, resembling mezereum or guaiac.

Another tropical family, the Anacardiaceæ, to which belongs the cashew nut, is represented with us by a single genus, but that the important one, *Rhus*.

Three of the species are harmless plants enough, the familiar sumacs, known especially for the brilliant scarlet of their autumnal foliage, and still more for the dense pointed (flame-shaped) clusters of their red, woolly, acid berries. The plants are throughout strongly astringent, the berries combining with the tannic a flavoring of citric acid, whence their use medicinally as refrigerants.

Rhus venenata, an erect shrub, resembling somewhat in aspect and foliage the foregoing species, is the justly dreaded poison sumac, or poison dog-wood of our swamps, while a more common and almost equally poisonous plant of the same genus, the poison ivy, or poison oak (*R. toxicodendron*), is a climber; most of us, if we have lived in the country, have made its acquaintance unpleasantly at some time in our lives. Poisoning the skin by contact, these plants reveal active and possibly medicinal properties that have not been thoroughly investigated, but undoubtedly entitle them to the place they hold in our *materia medica*.

In the buck-thorn family we find also one plant of reputed value, the New Jersey tea, or red-root (*Ceanothus Americana*).

The vine family furnishes but one plant of known medicinal virtue—the Virginian creeper, or American ivy, with which we are all familiar.

The Celastraceæ are represented by two species of euonymus—one a large shrub, the wahoo, one of the few plants that are commonly gathered in our State for export, the other a trailing plant, the strawberry-bush—both characterized by the scarlet inner covering of the seed, which is disclosed on the ripening of the fruit by the splitting of its outer integument. Another representative of the order, exhibiting the same peculiarity in a still more striking manner, since the fruit itself, before bursting, is of a rich orange color, is the highly ornamental shrubby bitter-sweet, *Celastrus scandens*, not to be confounded with the true bitter-sweet, *Solanum dulcamara*.

The small family of Polygalaceæ affords one important drug—senega, a herbaceous plant, having nothing very characteristic in its appearance. Five other species of the genus *Polygala* are found in the State, two of which, at least, are reputed medicinal.

The extensive family of Leguminosæ—the bean family—in these high latitudes at least, is one in which we do not look for very active medicinal properties. The wild indigo (*Baptisia tinctoria*), a low, shrubby plant, very abundant in unreclaimed lands, is mentioned as laxative and vulnerary, and the rather ornamental *Tephrosia Virginiana* (goat's-ruc), has obtained a place in the U. S. Dispensatory, more on the merits of its foreign congeners perhaps than on its own. The *P. piscatoria*, for example, is employed frequently by the Pacific Islanders for poisoning fish, and has been used even for criminal purposes.

Scarcely belonging, properly, to the Leguminosæ, yet included by botanists in that natural order, is one really valuable medicinal plant, the wild senna, *Cassia Marilandica*, corresponding closely in sensible and medicinal properties with the senna of commerce.

The rose family is one of unusual interest. It is not enough that it gives us, under a hundred forms that vie with one another in queenly beauty, the flower whose title to pre-eminence among

all that grace our gardens none dare dispute; it makes a flower garden once a year at least of the very orchards, and as cherry, and plum, and peach, and pear, and apple, and quince come successively into bloom, we know not whether most to admire the lavishness of coloring in the general effect, or the delicacy of shading, and the perfection of form and finish in each individual blossom, and it reserves still its more substantial gifts of the ripened fruit to distribute them through the long season from strawberries and cherries to peaches and apples. What fruits worth having, indeed, would remain to us dwellers in the temperate zone, were we deprived of all we owe to this one family? Grapes, indeed, and huckleberries, cranberries, currants, gooseberries—little else worth mentioning. Is the order less generous to the physician? Ask him whether he finds any astringent more useful than blackberry root—whether any other tonic can exactly replace wild cherry bark—what better substitute he can find for ipecac than our own gillenia, and he will, perhaps, himself mention, in addition, the cherry laurel. He might add to the list, from our indigenous plants, the astringents, *Spiraea tomentosa* (hardhack), agrimony (*A. Eupatoria*) and water avens *geum rivale*, and he would not have exhausted the subject.

Recent price lists of fluid extracts mention *Penthorum sedoides*, one of the stone-crop family, as a drug newly on trial—a common semi-aquatic weed which has heretofore concealed its merits very carefully.

The American alum root, *Heuchera Americana*, another astringent, represents a more important, but closely allied family, the *Saxifragaceæ*, to which belongs the hydrangea, as also the “*syringa*” or mock-orange of our gardens, and perhaps likewise the genus *ribes*, including the currants and gooseberries.

A tree which blossoms in October, just as it is losing its leaves for the winter, perfecting its seed the succeeding season, is an anomaly for which natural selection should be called upon to give some plausible account. Such a tree is the witch-hazel, *Hamamelis Virginica*, the only representative in our State of its family—a small one. Although not included in the list of the U. S. P., the witch-hazel has undoubtedly important medicinal virtues, and the

proprietary preparation, known as Pond's extract, has an immense sale throughout the country.

The family of the evening primrose is not noted for any remarkable activity of medicinal properties. I only mention as of possible interest from this cause two of our native plants, the wild evening primrose of the fields, conspicuous in summer and fall by the pure yellow of its large spiked flowers, and the greater willow herb, *Epilobium angustifolium*—the “fire weed” of northern Michigan, whose profusion of purple blossoms covers over with a mantle of rich coloring the black nakedness of the newly cleared land.

Umbelliferous plants are more often useful than ornamental—although when I call to mind the delicately cut foliage of even such common plants in the family as the parsley, carrot and giant fennel, I repent already of having made a statement so sweepingly invidious. Plants of this order are generally recognized at a glance by their peculiar form of inflorescence, but they are not so easily discriminated one from another, and as many of them are fatal and rapid poisons, all should be looked upon alike with suspicion until their harmlessness is certified by a proficient. Accidental poisoning is very frequent from mistakes with regard to these plants.

Many umbelliferous plants are simply aromatic, the fruit generally yielding some characteristic essential oil. Such are the several species of *Angelica* and *Heracleum* (cow-parsnip), the sweet cicely (*Osmorrhiza*), of which we have two species, and sanicle or black snake-root (*Sanicula Marilandica*).

Among the poisonous plants of the family indigenous to Michigan are the cow-bane, *Archemora rigida*, and closely resembling this in appearance, the water parsnip, *Sium lineare* (and *S. angustifolium*), the water-hemlocks, *Cicuta maculata* and *C. bulbifera*, fool's-parsley, *Conioselinum Canadense*. These are not commonly used medicinally, although two of them, the *Sium* lin. and *Cicuta* mac., are among the components of Kerr's dysentery “specific.”

Sparingly introduced among us is the officinal hemlock, the conium of the pharmacopœia—a medicine that would be more

valuable were its effects more uniform, and its preparations less liable to deterioration.

Very closely allied to the umbelliferæ are the aralias, which are also aromatic and reputed otherwise medicinal. Four of them are native, *A. nudicaulis*, wild sarsaparilla, *A. racemosa*, spike-nard, *A. hispida*, wild elder, and *A. quinquefolia*, called also panax, the ginseng which holds so important a place in the *materia medica* of the Chinese.

The dogwoods, *Cornaceæ*, are valuable tonics and antiperiodics; one of them distinguished as the flowering dogwood is placed, indeed, upon the primary lists of the U. S. P. Its flowers are in reality no more conspicuous than those of its congeners, but the compact clusters, which appear in early spring, are surrounded by an ample four-leaved involucre, creamy-white, which has all the appearance of an ordinary flower. The *C. sericea* is the kinnikinnik of the aborigines, used as a substitute for tobacco.

The large natural order, *Rubiaceæ*, which in the tropics produces Peruvian bark and madder and coffee, is represented in our latitude by a few plants only, and those of comparatively little interest.

Besides the galiums, of which we have a long list—we may mention the button-ball, *Cephaelanthus occidentalis*, as a tonic, and the pretty creeping partridge-berry, *Mitchella repens*, one of the ingredients of the mother's cordial, by which labors are believed to be made less difficult.

A few plants of the honeysuckle family must be just mentioned—the familiar elder, *Sambucus Canadensis*, the horse gentian, *Triosteum perfoliatum*, the bush honeysuckle, *Diervilla trifida*, and the high bush cranberry, *Viburnum Opulus*, in cultivation known as the snow-ball bush. *Viburnum prunifolium*, of greater value, probably, than all the rest, I think is not found in Michigan, although it must come close to our southern border.

When fields that in earlier summer were yellow with buttercups or white with daisies, or purple with fragrant clover blossoms, have grown sere and brown, or yielded their treasures to scythe and mower—when already there are seen here and there flecks of

scarlet amid the rich green of the yet flourishing foliage of maple, and pepperidge, and sumac, wild flowers of a stately growth and more gorgeous coloring begin to adorn fence rows, and fallow fields, and meadows. The golden rods, "heavy with sunlight;" the purer gold of sunflowers, and of coreopsis, and helenium, to name a few only out of the multitude; asters, which dare to put on the royal purple or to copy the cerulean hue of heaven, blazing stars, with light ruddier than that of the planet Mars; "everlastings," whitening all the fields with the pure luster of their satin blossoms; fringed gentians, a flower that so blends, in the mingled azure and and white of its exquisitely cut petals, modesty, and beauty, and purity, that it appeals irresistibly to the least susceptible heart; but the gentian alone of all this glorious company of the fall wild flowers claims no near kindred with its neighbors. They are all of the great family of Compositae, to which our flower gardens also are indebted for some of their most effective masses of rich coloring; *e.g.*, in the China asters, zinnias, marigolds, cinerarias, chrysanthemums, sun-flowers, dahlias.

Not less than one hundred and fifty representatives of this great order are reckoned among our indigenous plants, but a few only of these deserve especial mention as useful medicines.

Thoroughwort or boneset, *Eupatorium perfoliatum*, of course must be included in the list—a tonic, with whose virtues, and disagreeable qualities too, we some of us made a compulsory acquaintance in our childhood. The dandelion, *Taraxacum*, is another plant much used both in domestic and regular practice. Tansy, an introduced plant, is likewise well known, rather for its abuse than its use.

Elecampane and chicory are also naturalized plants, the former having a recognized place in the *materia medica*.

The Canada flea-bane, *Erigeron Canadense*, known also as horse-weed and fire-weed, yields a volatile oil that is said to control hemorrhages, and is used in the treatment of piles. Another fire-weed, *Erechthites hieracifolia*, has similar properties, and yields also a volatile oil.

The commonest of wayside weeds, the May-weed, *Maruta cotula*,

its yellow-eyed white blossoms familiar to every one, is our representative of the European chamomile, *Anthemis nobilis*; its place in the secondary list of the U. S. P. seems to be accorded it rather out of courtesy to the European plant, which, however, it resembles in properties.

Yarrow, *Achillea millefolia*, holds a similar position, out of regard, perhaps, to the high esteem in which it was formerly held.

One species of everlasting, *Gnaphalium polycephalum*, appears to have mild anodyne properties, and is reputed a valuable remedy for *gastralgie*.

Colt's-foot, *Tussilago farfara*, maintains its popular reputation as a cough remedy.

Besides these, I only mention the various species of *Liatris* (blazing-star, button snakeroot), the very inaptly named *Ambrosia* (rag-weed), the *Senecio* (squaw-weed), *Polymnia uvedalia* (leaf-cup), one of the remedies just now on trial: *Hieracium* (hawk-weed), *Rudbeckia* (corn-flower), and the asters and golden rods as embraced in the list of plants employed occasionally in medicine. *Helenium autumnale*, distinguished by its globose yellow heads, which have a conspicuous aureola of pure yellow rays, has perhaps more active properties than any of these; one of its southern congeners, *H. tenuifolium*, is said to be very poisonous, frequently causing the death of stock.

The lobelia family is a small one, but one which frequently unites with conspicuous beauty in its flowers, active poisonous properties. None of our wild flowers rivals in brilliancy of coloring the dazzling scarlet of the cardinal flower, and every one has singled out for notice and admiration the thick, densely flowered, purple-blue spikes of the greater Lobelia, *L. syphilitica*. It is a more modest plant, however, which figured so largely in the Thompsonian practice, and constitutes the officinal Lobelia of the pharmacopœia. Known to the Indians even as a narcotic, and used by them as a substitute for tobacco, this plant, *L. inflata*, undoubtedly deserves to rank among our more important indigenous drugs. In Michigan it appears to be comparatively scarce, although a very common weed elsewhere in the northern States.

The heath family, *Ericaceæ*, delighting especially in high lati-

tudes and in mountainous regions, is represented much more fully in the northern peninsula than in our own immediate vicinity. It embraces many interesting plants, and not a few remarkable for their beauty, *e.g.*, rhododendron, azalea, mountain laurel; or their usefulness, as the cranberry, huckleberry, and blue-berry.

The evergreen checker-berry, or tea berry, better known among us as winter-green (*Gaultheria procumbens*), whose bright red berries persist with the leaves through the season of snows, yields a volatile oil largely employed as a flavor, and interesting as containing salicylic acid. The white berries of the delicate trailing snowberry of northern bogs, *Chiogenes hispidula*, contain also this compound, which likewise exists in the aromatic bark of the black birch, and in some other plants. Somewhat similar in general aspect to the *Gaultheria*, and evergreen likewise, and called also winter-green, are the species of *Pipsissewa*—*Chimaphila*—of which we have two; and these agree again in therapeutic use with that other trailing evergreen, the *uva ursi*, or bear-berry, which belongs to another genus of the same family, *Arctostaphylos*. To mention the trailing arbutus, *Epigaea repens*, among medicinal plants, seems a species of profanity—so sacred are the tender and poetic associations that cluster about this loveliest and most fragrant of all our wild flowers. Through the long summer days it is busy hoarding up sweetness and light, not as a niggard or a miser, but only that when others have spent all, it may have treasure of enhanced value to dispense at last with lavish liberality.

The *Kalmias* are known as poisonous plants; even the flesh of partridges that have fed on the buds of these plants in winter, is said to have imbibed their poisonous qualities; but the nature of the poisonous principle, or its action on the system, has not yet been carefully studied.

One plant only of the holly family is indigenous in southern Michigan, the winter-berry, *Prinos verticillata*; and this, although esteemed medicinal, is best known from the ornamental character of its scarlet berries, familiar in Christmas decorations.

Mentioning only in passing the two species of *Plantain* that represent sufficiently their small family, and the insignificant *Pimpernel* of the more important primrose order; also the curious *Epiphegus*

(beech-drops, cancer-root), belonging to the Orobanchaceæ, plants without leaves, we pause on reaching so important a family as that which has given to the florist the snapdragon, and collinsia, and calceolaria, and maurandia; and to the physician, if nothing else, Digitalis, expecting to find among our indigenous species, of which the list is a long one, something of unusual interest.

Linaria vulgaris, butter-and-eggs, a pretty plant enough, with its dense spikes of yellow and orange blossoms; but a vile weed, and of a vile odor, not much used, and after all a naturalized plant.

Verbascum thapsus, common mullein, another naturalized plant, too familiar to need a word of description; but known again only as an imposing weed, not as a medicine.

Chelone glabra, turtle-head, snake-head, the name suggested by the strange shape of its white, closely clustered flowers; and perhaps this is the thing most noteworthy about the plant.

Veronica, speedwell, a large genus, and containing several names that have a place in the Dispensatory; here at last, in *V. virginica*, Culver's physic, better known as *Leptandra*, we find a drug probably of real merit. The tall, erect, sparingly-branched stem, whorled leaves, and slender, pointed spikes of small white flowers, sufficiently distinguish the plant which is frequently met with in woodlands throughout the southern part of the State.

The verbena family, as represented among us, is quite devoid of interest, although *V. hastata* and *V. urticifolia* are set down as medicinal; but the closely allied order of Labiateæ (mints) yields a large number of useful plants. Peppermint and spearmint are cultivated largely in our State, for the sake of the essential oils they yield.

Other plants, rich in volatile oils, are *Hedeoma pulegioides*, pennyroyal, *Monarda punctata*, horse-balm, and that favorite household remedy of the olden time, catnip (*Nepeta cataria*); also *Collinsonia Canadensis*, called likewise horse-balm. The bugle weeds, *Lycopus*, have a bitterness that is unusual in plants of this order, and probably deserve the reputation they enjoy locally as tonic and anti-periodic remedies.

Two species of *Scutellaria*, scull-cap, are met with in the State, plants having in their aspect or sensible properties nothing to indi-

cate an active medicinal character—mints evidently; one recognizes that in their square stems, opposite leaves and the cut of their foliage, even before the flowers—with thin, characteristic, two-lipped calyx and corolla—make their appearance; but destitute of the aromatic smell and taste that so generally accompany useful properties in the mints, and yet pronounced on high authority among our best nervines.

Very closely allied to the skull-caps is the common weed, *Brunella vulgaris*, whose popular name, heal-all, is evidence of the esteem in which it has formerly been held by the laity, but almost unknown to the faculty.

Hoarhound, *Marrubium vulgare*, is a foreigner, scarcely yet naturalized, but familiar in name and properties.

The Borage family furnishes no native plants of special interest, although two or three naturalized weeds, belonging to it, may be mentioned—the hound's-tongue, *Cynoglossum*, troublesome along road sides with its sticky burrs; comfrey, *Symphytum*, and gromwell, *Lithospermum*, all three rejoicing in the inappropriate specific name of “officinale.”

Mentioning only among the Convolvulaceæ, an *Ipomæa*, whose gigantic tubers cannot be compared in value with those of its congeners—the sweet potato and the jalap—we pass on to the interesting but dangerous family of the nightshades. Remembering how many of our common esculents, as well as our most showy flowers and most potent drugs, come from this source—for to the solanaceæ we are indebted for the potato, egg-plant, tomato, ground-cherry; the garden petunias, daturas, and brugmansias; the deadly nightshade, the stramonium and henbane, and tobacco, we are a little disappointed to find that the order is represented in our section of country by but three indigenous species, and these all of a single rather unimportant genus, *Physalis*.

Several, however, of the officinal plants already mentioned have become thoroughly naturalized among us. The rank-growing stramonium, with its large, uncanny-looking leaves, its showy, trumpet-shaped, white flowers, looking strangely out of place amid the coarse foliage of the plant; and its spiny fruit, a veritable thorn-apple, is familiar to all.

The henbane, *Hyoscyamus*, has established itself only in a few places, a plant occasionally met with in the vicinity of Detroit, but in late years singled out as a feeding plant by the unerring instincts of the poison-loving potato bug, and so likely to be exterminated. The same insect attacks also the stramonium, as well as the night-shade, and even the tomato; but does not appear to thrive well on any of them.

The black night shade, *Solanum nigrum*, is a common road side weed, not as poisonous probably as it is commonly reputed—for children often eat the ripe berries with impunity, and the leaves are freely used in some countries for greens.

The true bitter-sweet, met with frequently in woodlands, is also a solanum; but its crimson berries, however attractive to the eye, are too bitter and acrid to the palate to be dangerous.

The Gentian family is represented in our State by several valuable medicinal plants. Of the gentians proper, we have no less than eight—plants with showy blue or yellowish-white flowers appearing late in the season. All of them probably agree in properties with the officinal gentian; but one only, *G. quinqueflora*, is collected for medicinal use.

American Columbo, *Frasera Carolinensis*, belongs also to the gentian family, but is a rare plant in Michigan. The same is true of another of our native tonics, the American centaury, *Sabbatia angularis*, one of the prettiest of our wild flowers. From its general aspect one would be inclined to refer it to the pink family; the flowers are large and fragrant, the corolla of a delicate rose pink, so deeply parted that it seems at first sight to be made of five distinct petals. Other species of the genus are also well known in cultivation for the beauty of their regular white or pink flowers.

In bogs and wet grounds we meet with another of the gentianaceæ in the pretty and curious buck-bean, the spiked white flowers recognized at once by the heavy fringe-like beard that covers the upper surface of the corolla. The whole plant is bitter, and unites cathartic with tonic properties.

The dog-bane family, *Apocynaceæ*, belongs again chiefly to warm climates, and is distinguished on the one hand by the grace of form, the delicacy of texture, the richness of coloring, and the intoxicat-

ing fragrance of the blossoms of many of its species; on the other, by the poisonous character that pervades the whole order.

But two plants are natives of the State, both of them esteemed valuable medicinally, *Apocynum androsaemifolium*, dog-bane; and *A. cannabinum*, American Indian hemp. The former especially illustrates the manner in which plants of this order conceal under an attractive exterior, dangerous properties. One would scarcely look for harm in the dainty pink and white bells of its fragrant blossoms; but then it gives a warning after all in the suspicious milky juice that flows whenever the plant is wounded.

Fantastic in form and generally gaudy in coloring are the umbel-clustered flowers of the milkweeds (Asclepiadaceæ). In them again a milky juice is associated with active properties which have given to two of our species a place in the list of the U. S. Pharmacopeia. The most valuable, probably, as it is the most showy, is the butterfly weed, called also pleurisy-root (*Asclepias tuberosa*), displaying its bright orange flowers on hill sides, or sandy or gravely soils; while its more modest cousin, *A. incarnata*, delights in wet rich grounds along the margins of streams.

Among the Oleaceæ we must mention one important medicinal plant, the black ash (*Fraxinus sambucifolius*), which certainly holds no mean rank among our indigenous drugs.

The curious family of the pipe-vine (Aristolochiaceæ), is represented in our State only by the aromatic wild ginger, *Asarum Canadense*.

We have also the typical plant of another small family in the poke-weed, *Phytolacca decandra*, whose luxuriant leafage and compact racemes of dark purple berries render it one of the most striking of our native plants.

The Chenopodiaceæ are mostly plebeian plants, and so are many of the Amaranth family.

Among the Polygonaceæ we find the several species of *Dock*, too well known to require more than a bare mention; the sheep-sorrel, also a *Rumex*; and the aerid smart weeds (*Polygonum*), some of which are largely employed in domestic medicine.

The laurel family is represented in the aromatic spice bush,

Lindera Benzoin; and in the well-known sassafras, *Laurus Sassafras*.

Nearly allied to this is the natural order of Thymelaeace, to which is referred the medicinal *Mezereum*, represented among us by the tough-barked leather-wood or moose-wood, *Dirca palustris*. Another small family closely related to that which produces black pepper, furnishes for this enumeration a single plant, *Saururus cernuus*, the semi-aquatic lizard's-tail.

Especially rich in useful plants, and by no means destitute of ornamental ones is the large order of spurge-worts. Although technically apetalous, many of them are cultivated for the beauty of their flowers, brightly colored bracts supplying the place and fulfilling the functions of a corolla. A conspicuous instance of this is seen in the poinsettias, as also in our own wild flowering spurge. Among useful plants of the order, some are food plants—as the *manihot* and *cassava*; others yield valuable timber, as the teak; others furnish caoutchouc (*Siphonia*); several yield fixed oils, as the castor oil, the candle-nut (*Aleurites*), and the Chinese tallow-tree. The majority of these are poisonous, some, as the manchineel, dangerously so; while others are found potent medicines, *e.g.*, croton oil, *stillingia*, and the unpopular castor oil. The order, however, is very sparingly represented in a climate so cold as ours, and we can only enumerate a few species of *Euphorbium*, *E. corollata*, *E. maculata*, and *E. hypericifolia*, as plants entitled to a place in the *materia medica*.

The nettle family, which resembles the last in the number and variety of its useful products, including breadfruit, mulberry, fig, hemp, haschish, hop, elm, sycamore, banyan, and the india-rubber tree, yields among us nothing more important than slippery elm bark. The hop, *Humulus lupulus*, is also indigenous, but the market, of course, is supplied always from the cultivated plant.

Trees of the walnut family, hickory, butternut, and black-walnut, besides furnishing us their invaluable timber, and the nuts which give school-boys healthful occupation for their holiday afternoons, and squirrels their winter's supply of provisions, yield in their bark a medicine of no mean value. *Juglans cinerea* has a place indeed in the primary list of the U.S. P.

Still among the forest trees, we note the oaks, *Cupuliferæ*, as furnishing our principal supply of tannic acid; and in the same family the chestnut, *Castanea vesca*, whose reputation in the treatment of whooping-cough is probably not without foundation.

Among the *Myricaceæ*, the aromatic bay-berry, *Myrica cerifera*; the sweet-gale, *M. Gale*; and the sweet-fern, *Comptonia asplenifolia*, must be noted. And of the closely allied birch family, three species of *Betula* (birch), *B. lenta*, *B. alba*, and *B. lutea*; and two at least of *Alnus* (alder), *A. incana*, and *A. serrulata*, are mentioned in the U. S. Dispensatory.

The long list of willows—we have about a dozen indigenous species—with the allied poplars, included all in the order of *Salicaceæ*, may be disposed of in a sentence by stating that they agree in containing salicin, an agent that bids fair to assume a place near quinia itself in the variety and importance of its therapeutic uses.

Celebrated in the poetic literature of every language, from the days of Homer and of the Hebrew poet-king, to those of our own Lowell and Whittier, the evergreen coniferæ are acknowledged among all the trees of northern forests the royal family. Their distinguished pedigree goes back, indeed, as chronicled in the imperishable record of geology to the time when they held joint empire in a flora of more than tropical magnificence with palms and tree ferns, which now maintain their sway only within the torrid zone.

The stately spruce and pine that defy the winters of hyporboreal climes, the cypress of southern everglades, the classic cedar of Lebanon, and the giant Sequoias of California, ranked as among the wonders of the world, are some of the nobler scions of this royal house. In a State whose most important products are those obtained from her "pine lands," it is needless to enlarge on the importance from the utilitarian stand-point of our own representatives of the pine family. We only note therefore, incidentally, the influence which the balsamic exhalations from these trees are believed to have in warding off malaria, possibly by promoting the formation of ozone in the air, and the stimulating medicinal quality that belongs generally to their resinous exudations. We may particularize from our own northern forests the balsam fir, *Abies balsamea*,

as furnishing the Canada balsam, and *Pinus rigida* as among the species yielding tar, pitch, and turpentine; obtained, however, more largely from the pines of the south.

Hemlock, *A. Canadensis*, is valued for the astringent properties of its bark, used so largely in tanning hides.

The Tamarack, or American larch, *Larix Americana*—unlike most of the conifers, a deciduous tree—abounding in swampy land throughout the State, must not be omitted from the list of our useful medicinal plants.

Savine, *Juniperus sabina*, grows in the northern peninsula. The medicinal juniper, *J. communis*, is also common in various parts of the State, delighting especially in rocky sterile soils.

Red cedar, *J. Virginiana*, less hardy than the last, must be mentioned as akin in properties to the true savine. The white cedar, *Thuja occidentalis*, also, which forms the cedar swamps of the northern portion of the State, has useful medicinal properties; and the same may be true of the certainly poisonous *ground-hemlock*, or American yew, *Taxus baccata*, whose wax-like, coral-red berries form a singular contrast with the spruce-like foliage of the plant.

Coming to monocotyledenous (endogenous) plants, we find the Arum family an interesting one. Familiar to the gatherer of wild flowers are the singular hooded spathes of the Indian turnip or Jack-in-the-pulpit, *Arisaema triphyllum*, green, variegated generally with stripes and blotches of dark purple, and not less conspicuous in the fall are its clusters of orange, red, or scarlet berries. Most boys, too, have a vivid recollection of some occasion, when their confidence was abused by some older companion who induced them to "take a little taste" of the turnip-shaped root whence the plant has its name. The insupportable biting, burning sensation which endures for hours, forms a lesson that generally lasts a life time—*crede experio*. This acridity is common to plants of this and allied genera (*e. g.*, the Callas), being present even in the roots of the esculent tanya of the south, *A. esculentum*; but dissipated by heat, in cooking; and it is believed that it is to their acrid principle that the medicinal virtues popularly ascribed to these plants are due. *A. dracontium* is in our State a rarer plant, identical in properties with that described.

Not to be confounded with this is the officinal *Dracontium*, skunk-cabbage, *Symplocarpus fœtidus*, the large, round, radical leaves of which are seen everywhere in low wet grounds throughout the early part of the season. This again is one of the few medicinal plants collected for the drug market in our State.

The sweet flag, *Acorus Calamus*, aromatic instead of acrid, abounds at least in our own immediate vicinity; too well known to need more than bare mention.

In the water-plantain family, *Alisma plantago* may be noted as "medicinal."

Two large orders embrace most of the ornamental endogens—those of the *orchis* and of the *lily*—both remarkable for the richness and variety of coloring, and often for the marvelous delicacy of texture of their conspicuous flowers; but the former continually surprising us with some wholly original new conceit of fantastic yet always graceful form; the latter relying almost always for its effects on the graceful outline of some symmetrical design. As instances of the first, we cite, among our wild flowers, the handsome swamp-pinks of our bogs—*Calopogon*, and the rare *Arethusa*; or, as still more characteristic, the moccasin-flowers or lady's-slippers, *Cypripedium*, of our woodlands. Of the last there is no better example than that of our common spotted meadow lilies.

In our severe climate, however, we look in vain for the lavishness of beauty that we find in exotic plants of these families to which the greenhouse and the flower garden are indebted for their choicest ornaments.

Among our native orchids, two genera only are of interest to the medical man—*Corollorhiza*, which furnishes the coral root exported from Michigan; and *Cypripedium*, a most valuable medicine, if its virtues can be judged by its disgusting flavor.

Besides the officinal *C. pubescens*, we have four or five species that probably agree closely in medicinal characters—*C. parviflorum*, yellow-flowered like the first, which it very much resembles in general appearance; *C. spectabile*, very handsome, with its large purple and white corolla; *C. acaule*, like the last, but less leafy; and *C. candidum*, a rarer, white-flowered plant.

In the lily family we find but one plant of primary importance,

the green hellebore, *Veratrum viride*, probably found in our state, but which I have never met with. Its tall stem, large plaited leaves, and spreading racemes of inconspicuous flowers make it an easy matter to single it out among all the plants of the swamp.

Here belong too the wild garlics, *Allium Canadense*, *A. tricoccum* and *A. cernuum*, which have doubtless the same medicinal properties (as they have the same intolerable odor), as those which belong to the cultivated garlic and onion.

The "wake robins" (*Trillium*), appropriately named as among the earliest harbingers of spring, are reputed medicinal; and so are the Solomon's-seal *Polygonatum giganteum*, the Indian cucumber root *Medicola Virginica*, and the adder's-tongue, *Erythronium*.

Among the *Dioscoreaceæ*, we must mention the wild yam, *D. villosa*, a pretty climbing plant, with heart-shaped, veiny leaves.

The wild blue-flag, *Iris versicolor*, abundant in wet grounds everywhere, is a representative of the ornamental Flower de luce family, and a potent medicine.

Of the small family of *Hæmadoraceæ*, our single representative, colic root or star-grass, *Aletris farinosa*, is also officinal.

The immense family of sedges is totally devoid of interest to the physician; and even the grasses, although fairly rivaling more ambitious plants in utility and even in beauty, furnish little to the *materia medica*.

Couch grass, *Triticum repens*, is employed to some extent medicinally, but could well be spared from our list—so the farmers and gardeners might be spared the endless labor of fighting a foe so tenacious of life.

The poisonous darnel, *Lolium temulentum*, too, must be named as a grass having exceptionally active properties.

Ferns, attractive as they always are to those who have an eye for beauty and grace of form, possess comparatively little interest to the utilitarian. A few of them have edible, although not very nutritious roots or stems—as for example the familiar brake, *Pteris aquilina*; and several species are reckoned medicinal. Among these is the beautiful maiden's-hair fern, *Adiantum pedatum*; the rock-brake, *Polypodium vulgare*; the flowering fern, *Osmunda regalis*; the female fern, *Asplenium filix femina*; and the common brake

already mentioned as an esculent. More important, probably, than any of these is the male fern, *Aspidium filix mas*, which is among the rare plants of our northern peninsula.

Of the half dozen species of that curious genus, *Equisetum*, scouring rushes, one, *E. hyemale*, is singled out for mention in the Dispensatory, probably not from any peculiar virtues which its congeners do not share.

Lycopodium is the name given to the spores of the various species of club-moss, or ground-pine, *Lycopodium*, which we need not further particularize by name.

A single representative of the moss family is recognized as medicinal, the hair-cap moss, *Polytrichum juniperinum*.

Finally, the family of the *Fungi* furnishes us with one or two of our most useful medicinal agents—ergot of rye, produced by the growth of *Claviceps purpurea*; and corn-smut, probably very similar in properties, occasioned by another fungus, *Ustilago maidis*.

